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JOAN BAPTISTA PORTA

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Like a cemetery with costly monuments for the rich, modest wooden crosses for the poor, and for others sites unmarked, hidden beneath brambles and weeds, a picture of death and oblivion—so history of botany has dealt with records of the past, with life and labors crowned with success or hopelessly ignored and forgotten.

For years, nay centuries unchallenged some works have braved the everchanging hands of time, guiding human thought into a highway with increasing light, confronting nature, its laws and problems; great steps have been taken forwards, new facts have been born, militating against former, old conceptions and resulting in complete revolution. Coupled with intense sincerity great skill has conquered, paving the way for future research, culminating in success, or suddenly, without a warning, crushed with defeat. Many a brilliant thought, but disguised by a less powerful style, has remained obscure and unnoticed, until at some proper time, as if surviving itself, it has arisen and gained due homage, even though late and in foreign soil.

Inclement fate has doomed to silence names of great men, more fortunate thus than labors of merit that have been misunderstood, carelessly weighed, and exposed in unfavorable light. Who knows Porta? His work was soon forgotten and in history it stands among those ridiculed or silently passed by. He was born in classic Italy, in the middle of the sixteenth century, an era of scientific research, marked by rapidly increasing interest in botany, with splendid results laid down in precious volumes, copiously and carefully illustrated. They were the days of Cæsalpino, Dodonæus, Conrad Gesner, Fuchs, Clusius, Lobelius, Caspar Bauhin, all workers in botany, seeking the same source for solving the problems of the plant world, through demonstrating the relations between the plants themselves, and beginning with classification first of all. At that time literature was less than scant; there was actually nothing to distract the views of investigators; it was an era of thought original, with room only for the gifted and talented, none for the mediocre. And strange to say, Cæsalpino, though secluded from the botanical centers of Holland, France, and Germany, rose to hold the palm as the most brilliant of his contemporaries. In modern times he is still revered as the father of systematic botany. To these men Porta was not known, and presumably they were not known to him either. To describe the principal episodes in the life of Porta, the various phases of his character and labor, history has little to say, fame less.

He was born in Naples, in the year 1545, and he did succeed in gaining reputation as a noted naturalist, philosopher, physician and pharmacologist. His home was a favorite gathering place for men of learning; meetings were held, dubbed "Accademia dei Secreti," and themes were discussed delving into all the mysteries of nature, principally the chimerical secrets of magic. That Porta held an eminent place among his associates seems proven by the fact that they regarded him as "a new prophet," and as such Porta was summoned to the court of Rome to defend himself. He must have made a bold stand, for instead of meting out some punishment for his suspected, supernatural power, the court exonerated him and elected him a member of the Accademia dei Lincei. After that time he lived in Rome for several years, and he died in February 1615. The only botanical work written by Porta is "Phytognomonica," published in Naples, 1588. Three subsequent editions, 1591, 1608, and 1650, were published in Germany. In the later years of his life Porta acquired no small notoriety as an author of dramas and tragedies. Considering the profuse material treated in "Phytognomonica," and the fact that Porta was only in his forty-fourth year when the work appeared in print, he must have begun his botanical career at a very early age.

In this work, "Phytognomonica," Porta introduced a new system for plants, but far different from those established by his contemporaries or predecessors. His mind, evilly influenced by the extravagancies of the Paracelsistes, dwelt mostly upon such singular phases, remote from natural history, as similarity between parts of plants and organs of man and animals, or the resemblance of parts of plants with diseases of man and animals, furthermore the habit or aspect of plants as being analogous to those of man, and finally the relation of plants to the stars, the sun, and the moon. Nevertheless Porta was a botanist, and a very learned one. His studies of plants reveal more than a superficial knowledge of their parts, and he must have known many. But from beginning to end the system, or better the method, proposed by him was too enigmatic to conform with the requirements of natural science, founded as it was on principles so contrary to nature as they possibly could be; and so the system never reached beyond being considered the product of "l'imagination brilliante mais déréglée."[1]

It is, indeed, difficult to understand how a man so intellectually gifted as Porta would ever waste his time and labor on such problems as to demonstrate the secret virtues of plants by merely observing the forms of their parts and the color of their flowers. Thus according to Porta certain species of *Orchis* with the roots palmate, and grasses with the spikes in fives (*Cynodon Dactylon*) would be a safe remedy for diseases in foot or hand, for gout, etc.; plants with heartshaped roots or fruits (*Valeriana, Persea*) for heart disease; plants with the flowers resembling eyes (*Aster, Sedum*) for eye diseases. Furthermore, plants with spotted stems (Araceæ) would on account of their likeness to snake-skin be useful as antidote for snake bites, etc. Forty-two sections of this type are described by Porta, and some are fairly well illustrated. Much attention is given to citing and explaining descriptions and names of species known to and mentioned by the old authors, Pliny, Dioscorides, Columella, and others, and from this particular viewpoint the book is quite interesting and useful.

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[1] Compare Planchon, J. E., "Des limites de la concordance entre les formes, la structure, les affinités des plantes et leurs propriétés medicinales," Thèse, Montpellier, 1851.

But even if the greater part of this book is devoted to considerations of the secret virtues of plants, some chapters and remarks, scattered here and there, reveal the indisputable talent of Porta as an observer of plant life. To do full justice to this part of his work let us briefly consider the status of botany in the sixteenth century. It was an era of classification or attempted classification; the plants were described and arranged in some way as an expression of their mutual relationship. By Bock (1560) they were divided into herbs, shrubs, and trees; by Clusius (1576) the system became enlarged so as to comprise bulbous plants, plants with the flower fragrant or inodorous, plants with milky juice, etc. The descriptions furnished by Clusius have always been regarded as most excellent, but he gave much more attention to the foliar structure than to the floral; in this point of view he was followed by Lobelius and Dodonæus. Caspar Bauhin (1550–1624) established a system covering twelve books, and he began with the grasses and grass-like plants, including *Iris, Acorus,* etc.; after these came the bulbous plants, then those with large, edible roots, etc.; the genera were not described, only the species with a number of synonyms. Bauhin was the earliest author to use binary names; but in describing the plants he did not consider the structure of the flower, nor the fruit. Finally Cæsalpino (1583) not only established a system principally based upon the organs of fructification, hitherto ignored, but he added a large number of new observations of great importance to the study of botany. The introduction to his work contains a discussion of theoretical botany in general. With regard to his classification of the plants, into arborescent and herbaceous, the minor groups, characterized by the structure of fruit and seed, are not natural, except the sixth, which comprises the Umbelliferæ, the tenth, Boragineæ and Labiatæ, and the fifteenth, plants destitute of flowers and fruits, ferns, mosses, and fungi.

Naturally the tendency to classify governed botanical research during as early a period as the sixteenth century, and the various systems proposed were all purely artificial. Not until the year 1703 were the Phanerogams distinguished as mono- and dicotyledonous by Ray. We remember that so late as the middle of the eighteenth century Linné established his artificial system, based upon the floral structure, and at about the same time Antoine Laurent de Jussieu undertook the task to describe the families. In other words, Bauhin wrote the diagnoses of the species, Tournefort (about 1700) characterized the genera, Linné arranged the genera in groups, which he named only, and finally Jussieu established a natural system with family-diagnoses. But returning to the sixteenth century, the actual knowledge of the plants was embodied in systems, and beyond the mere classification no attempts were made to consider the plants from a biological viewpoint, as members of a living world adapted to environments of highly different nature as to climate and soil, at least not in accordance with the history of botany. The treatment of this particular phase of plant life was reserved to the very close of the nineteenth century, when Warming[2] introduced a supposed new branch of botanical science, dealing with plant societies, now universally recognized as plant ecology. The appearance of this work has brought about a fuller valuation of the factors that govern plant life, a purely biologic consideration of the plants on morphological and physiological grounds. However, twenty years of experience has taught us that this branch of botanical science lacks organization and is yet rather to be compared with a speculation having run far in advance of facts. Nevertheless the supposed new doctrine does exist, and has existed for more than three centuries, founded by Porta, and amply discussed in several chapters of his "Phytognomonica." No mention is made by Warming of Porta's book. And, strange to say, no mention is made of Planchon's either. By Sachs[3] Porta is passed by in silence.

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[2] "Plantesamfund," Kjœbenhavn, 1895.

Planchon (*l. c.*), Guy de la Brosse[4] and Adanson[5] refer only to the part dealing with the secret virtues of plants; the chapters on plant societies are ignored, or let us say not appreciated.

To Porta the method of classifying plants as instituted by his contemporaries must have been absolutely unknown; of rendering the knowledge of plants more accessible by means of a system he had no thought. His principal object was to demonstrate the virtues or properties possessed by plants, and, as stated above, Porta combined these with the general aspect of plants, the shape of their leaves, stems, etc. While making these observations in the field, as he did, Porta became aware of the distribution of a number of species under conditions very variable, and especially with regard to the soil. He noticed the fact that the general aspect of the plants, their shape, color, odor, hairiness or smoothness, at least to some extent, depended upon the environment in which they grew, and from this point of view, we might say "biologic," did Porta elaborate the introduction to his "Phytognomonica." He divided the plants in two groups, aquatic and terrestrial, each with several subdivisions. Of the former, examples are given of species characteristic of lakes, swamps, rivers, brackish marshes, etc., and he described the habit of several plants, in most cases very correctly. With respect to the terrestrial plants Porta distinguished between those that occupy a rich, a dry, or a sandy soil, illustrated by *Malva, Lithospermum,* and *Fœniculum.* Furthermore, some amphibious species are described, such as are terrestrial but adapted also to live in the water. In several chapters descriptions are given of the habits of plants, of species characteristic of the mountains, the lowlands, the hillsides, and the shady valleys; to these were added some brief remarks upon the vegetation of the northern, the temperate, and the torrid zones. Among the cultivated plants Portà mentions *Zea,* which, however, is not the plant known now under this name (maize), but a kind of wheat (*Triticum Spelta*) as demonstrated by De Candolle. In bringing these facts together Porta certainly laid the foundation of plant ecology, and the classification, proposed by Warming (*l. c.*), of the various plant societies: *"Hydrophytes, Xerophytes, Halophytes* and *Mesophytes"* is not much more instructive than the one introduced by Porta: "plantæ palustres, fluviatiles, marinæ, salsæ aquæ, silvestres," etc.

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[3] "Geschichte der Botanik," München, 1875.

[4] "De la nature des plantes."

[5] "Familles des plantes," Vol. I, préf., p. ii, 1763.

Naturally these groups have received a more elaborate treatment by authors of a recent date, especially with reference to the internal structure, which often, but very far from always, is in correlation with the respective environment. However, the weakness of modern ecology rests on the belief that the structures may be explained as caused by the natural surroundings. Experience has taught that the genera and species do possess some character of their own, which they never give up. To a certain limit the plants may allow themselves to submit to changes, but beyond that they will sooner die.

So far as Porta considered the biologic question of plant life, dealing only with the superficial aspect, more or less comparable to the surroundings, he committed no errors of consequence. For as a matter of fact the principal features exhibited by members of plant societies are mainly external, such as the shape of leaves, their relative size, the organs of vegetative reproduction, and the general habit; the internal structure cannot be relied upon, at least not at the present stage of our knowledge of plant life.

Thus already in the sixteenth century the first essay on plant ecology appeared, and Porta was the author.